PATENT COOPERATION TREATY

Translation

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference **BCS033028-WO**	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2004/006368	**14.06.2004**	**24.06.2003**

International Patent Classification (IPC) or both national classification and IPC

Applicant
BAYER CROPSCIENCE AKTIENGESELLSCHAFT

1. This opinion contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☒	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☒	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP Facsimile No.	Authorized officer Telephone No.

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Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ in written format

      ☐ in computer readable form

   c. time of filing/furnishing

      ☐ contained in the international application as filed.

      ☐ filed together with the international application in computer readable form.

      ☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. II Priority

1. ☒ The following document has not yet been furnished:

   ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

   ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

   Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

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Box No. III **Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 6-7, 9-16

because:

☒ the said international application, or the said claims Nos. 6-7
relate to the following subject matter which does not require an international preliminary examination (*specify*):

See supplemental sheet

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 9-16

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form
- ☐ has not been furnished
- ☐ does not comply with the standard

the computer readable form
- ☐ has not been furnished
- ☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details.

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

   ☐ paid additional fees

   ☐ paid additional fees under protest

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   See supplemental sheet

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts

   ☒ the parts relating to claims Nos. 1-4, 5-8

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-8	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-8	NO
Industrial applicability (IA)	Claims	1-5, 8	YES
	Claims		NO

2. Citations and explanations:

1 This opinion makes reference to the following documents:

D1: WO 2004/011467 A (HOKKO CHEM IND CO; MURAKAMI HIDEYUKI (JP); WAKABAYASHI HITOSHI (JP)) 5 February 2004 (2004-02-05)

D2: WO 02/02563 A (AMERICAN HOME PROD) 10 January 2002 (2002-01-10)

D3: PATENT ABSTRACTS OF JAPAN Vol. 2003, No. 02, 5 February 2003 (2003-02-05) & JP 2002 308878 A (NIPPON SODA CO LTD) 23 October 2002 (2002-10-23)

D1 was published between the priority date and the filing date as international patent application. If priority can be claimed rightfully, D1 does not constitute prior art within the meaning of the PCT and will not be taken into consideration further here under item V.

2 The present application does not meet the requirements of PCT Article 33(1) since the subject

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

matter of claims 1-8 is not inventive within the meaning of PCT Article 33(3).

Document D2 is considered the closest prior art. In claim 2, it discloses triazolopyrimidines which overlap with the products according to the invention. As regards the radical in 6-position, D2 teaches on page 73 that this radical can also represent pyridine and pyrimidine, as well as further heterocyclic radicals. However, since such ring systems are not disclosed in the form of specific examples, the 6-heterocyclyl-substituted triazolopyrimidines according to the invention are considered a novel selection.

However, the expert who, starting from D2, was searching for further antitumour agents, would have understood that the group selected now have characteristics which are comparable with the 6-aryl derivatives mentioned individually in D2. In particular, he would have expected that the qualitative suitability of the products as antitumour agents would not change, in particular since the chemical, sterical and electronic characteristics have already been confirmed by sufficient variability of the radical in 6-position. The selection according to the application of heterocyclic radicals R3 without further limitation therefore does not lead to a technical teaching which adds inventiveness to what is already known. The solution of the problem by the selection described therefore does not involve an inventive step.

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Box No. VI **Certain documents cited**

1. Certain published documents (Rule 43*bis*.1 and 70.10)

Application No. Patent No.	Publication date *(day/month/year)*	Filing date *(day/month/year)*	Priority date (valid claim) *(day/month/year)*

2. Non-written disclosures (Rule 43*bis*.1 and 70.9)

Kind of non-written disclosure	Date of non-written disclosure *(day/month/year)*	Date of written disclosure referring to non-written disclosure *(day/month/year)*

See form 210

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box III

1 No search report has been established for the subject matter of claims 9-16. These claims can therefore not be subjected to a preliminary examination (PCT Rule 66.1(e)).

2 Claims 6 and 7 relate to subject matter which, in the opinion of this Authority, falls under PCT Rule 67.1(iv). In particular, the claimed use and the method also comprise the treatment of humans and mammals, as can be seen from the description on page 33. Consequently, no expert opinion has been established in respect of the industrial applicability of the subject matter of said claims (PCT Article 34(4)(a)(i)).

Box IV

The different groups of inventions are:

Group A: claims 1-8
Triazolopyrimidines, their preparation from the intermediates of the formula (II), and their use for controlling microorganisms

Group B: claims 9, 10
Intermediates (II) and their preparation

Group C: claims 11, 12

Supplemental Box

Intermediates (VI) and their preparation

Group D: claims 13, 14
Intermediates (VII-a) and their preparation

Group E: claims 15, 16
Intermediates (VII-b) and their preparation

These inventions/groups are not so linked as to form a single general inventive concept (PCT Rule 13.1) for the following reasons:

The triazolopyrimidines (I) according to the invention are prepared by reacting heterocyclylmalonates of the general formula (VII) to give dihydroxytriazolo-pyrimidines of the formula (VI), which, after conversion into the dihalo derivatives (II), are reacted to give the end products (I) which are suitable as agents against microorganisms and/or as antitumour agents. Dihydroxy and dihalo products are already known from the publications of Makisumi (piperidine and morpholine derivatives) cited in the search report, and from WO-A-02 50077 (example 1 with benzodioxolyl at the position of group R3 according to the invention). The 5,7-disubstitution pattern for hydroxy- and/or halo-substituted triazolopyrimidines can therefore not be considered as a "special technical feature" within the meaning of PCT Rule 13.2, not least because the preparation of triazolopyrimidines via these intermediates makes no inventive contribution to the prior art. The expert who was searching for further triazolopyrimidines for controlling microorganisms was therefore able to resort to one of the known methods for

Supplemental Box

the preparation of dihydroxy- and/or dihalotriazolopyrimidines. Finding an, if appropriate, improved alternative method for already known intermediates, and providing novel pharmaceutical and agrochemical active substances, are therefore considered as different problems which are not connected by a single inventive concept. As regards the intermediates VII-a and VII-b, with regard to the preparation of selected heterocyclylmalonates, the description recognizes that products with a group R3 according to the invention are already known from the prior art. The intermediates now claimed are obtained in a manner known per se and used further as intermediate. The selected pyridine and pyrimidine radicals together with the specific substitution patterns thus constitute a "special technical feature" within the meaning of PCT Rule 13.2 which differs from those of the remaining groups of inventions. These groups of inventions solve the problem of providing an, optionally improved, analogous method whose inventive concept does not match that of the other inventions and are therefore not linked to these groups by a single or technically related solution.